

PCTWORLD INTELLECTUAL PROPERTY ORGANIZATION
International Bureau

INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

(51) International Patent Classification 6 : A61M 5/32, 5/34	A1	(11) International Publication Number: WO 99/62579 (43) International Publication Date: 9 December 1999 (09.12.99)
<p>(21) International Application Number: PCT/GB99/01006</p> <p>(22) International Filing Date: 31 March 1999 (31.03.99)</p> <p>(30) Priority Data: 9811603.1 30 May 1998 (30.05.98) GB</p> <p>(71) Applicant (for all designated States except US): NMT GROUP PLC [GB/GB]; New Medical House, Oakbank Park, Livingston, Scotland EH53 0TH (GB).</p> <p>(71)(72) Applicant and Inventor: TARGELL, John [GB/GB]; Craigie Byre, Craigie, Kilmarnock, Ayrshire KA1 5NH (GB).</p> <p>(74) Agents: McNEIGHT, David, Leslie et al.; McNeight & Lawrence, Regent House, Heaton Lane, Stockport, Cheshire SK4 1BS (GB).</p>		<p>(81) Designated States: AE, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, CA, CH, CN, CU, CZ, DE, DK, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MD, MG, MK, MN, MW, MX, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, UA, UG, US, UZ, VN, YU, ZA, ZW, ARIPO patent (GH, GM, KE, LS, MW, SD, SL, SZ, UG, ZW), Eurasian patent (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European patent (AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE), OAPI patent (BF, BJ, CF, CG, CI, CM, GA, GN, GW, ML, MR, NE, SN, TD, TG).</p> <p>Published With international search report.</p>
<p>(54) Title: HYPODERMIC NEEDLE</p> <div data-bbox="386 1033 993 1348"></div> <p>(57) Abstract</p> <p>There is disclosed a combination of a hypodermic needle assembly for connection to the barrel (14) of a syringe and a protective sheath (16) enclosing the assembly until required for use, the assembly and sheath (16) having interengaging means (18, 19) to hold the assembly within the sheath (16) characterised in that the length of the sheath (16) is such that the rim of its open end engages the barrel (14) of the syringe before connection with the syringe is complete whereby completion of the connection forces disengagement of the interengaging means (18, 19).</p>		

FOR THE PURPOSES OF INFORMATION ONLY

Codes used to identify States party to the PCT on the front pages of pamphlets publishing international applications under the PCT.

AL	Albania	ES	Spain	LS	Lesotho	SI	Slovenia
AM	Armenia	FI	Finland	LT	Lithuania	SK	Slovakia
AT	Austria	FR	France	LU	Luxembourg	SN	Senegal
AU	Australia	GA	Gabon	LV	Latvia	SZ	Swaziland
AZ	Azerbaijan	GB	United Kingdom	MC	Monaco	TD	Chad
BA	Bosnia and Herzegovina	GE	Georgia	MD	Republic of Moldova	TG	Togo
BB	Barbados	GH	Ghana	MG	Madagascar	TJ	Tajikistan
BE	Belgium	GN	Guinea	MK	The former Yugoslav Republic of Macedonia	TM	Turkmenistan
BF	Burkina Faso	GR	Greece			TR	Turkey
BG	Bulgaria	HU	Hungary	ML	Mali	TT	Trinidad and Tobago
BJ	Benin	IE	Ireland	MN	Mongolia	UA	Ukraine
BR	Brazil	IL	Israel	MR	Mauritania	UG	Uganda
BY	Belarus	IS	Iceland	MW	Malawi	US	United States of America
CA	Canada	IT	Italy	MX	Mexico	UZ	Uzbekistan
CF	Central African Republic	JP	Japan	NE	Niger	VN	Viet Nam
CG	Congo	KE	Kenya	NL	Netherlands	YU	Yugoslavia
CH	Switzerland	KG	Kyrgyzstan	NO	Norway	ZW	Zimbabwe
CI	Côte d'Ivoire	KP	Democratic People's Republic of Korea	NZ	New Zealand		
CM	Cameroon	KR	Republic of Korea	PL	Poland		
CN	China	KZ	Kazakhstan	PT	Portugal		
CU	Cuba	LC	Saint Lucia	RO	Romania		
CZ	Czech Republic	LJ	Liechtenstein	RU	Russian Federation		
DE	Germany	LK	Sri Lanka	SD	Sudan		
DK	Denmark	LR	Liberia	SE	Sweden		
EE	Estonia			SG	Singapore		

HYPODERMIC NEEDLE

This invention concerns a hypodermic needle assembly adapted for connection to the barrel of a hypodermic syringe.

Generally such a needle assembly is provided in a protective sheath having one end closed until the assembly is required for use by a sterile seal, for example a tear-off strip of foil. Once the foil is removed, care is needed to ensure that the assembly does not drop from the sheath onto an unsterile surface. Even when the assembly is removed with care, there is a danger of the needle causing injury or becoming contaminated during the operation of connecting the assembly to a syringe.

It is an object of the present invention to provide a hypodermic needle assembly and protective sheath which overcome the problems aforesaid and ensure proper engagement of the needle assembly with the barrel.

This latter is particularly important when the assembly provides for automatic retraction of the needle into the body of the syringe at the completion of the administration of an injection. Such retraction arrangements operate to extremely fine tolerances (unless substantial waste of the material being injected can be tolerated) and would fail if the axial positioning of the assembly and syringe barrel were incorrect.

According to the present invention, there is provided a combination of a hypodermic needle assembly for connection to the barrel of a syringe and a protective sheath enclosing the assembly until required for use, the assembly and sheath having interengaging means to hold the assembly within the sheath, characterised in that the length of the sheath is such that the rim of its open end engages the barrel of the syringe

before connection with the syringe is complete whereby completion of the connection forces disengagement of the interengaging means..

The interengaging means may comprise a circumferential rib on the assembly and an indent on the sheath.

The assembly may connect with the syringe by means of a screw thread.

The assembly may connect with the syringe by means of a bayonet-type connection.

There may be an axially extending splined connection between the assembly and the sheath whereby torsional forces applied to the sheath during the connecting operation are transmitted to the assembly.

The invention will be further apparent from the following description with reference to the several figures of the accompanying drawings, which show, by way of example only, one form of needle assembly and protective sheath embodying same.

Of the drawings :-

Figure 1 shows a side elevation of the needle assembly and sheath;

Figure 2 shows a cross-section through the needle assembly and sheath on the line II-II of Figure 1;

Figure 3 shows a cross-section through the needle assembly and sheath on the line III-III of Figure 2; and

Figures 4 to 7 show fragmentary cross-sections on an enlarged scale of successive stages in the connection of the needle assembly with the barrel of a hypodermic syringe.

Referring now to the drawings, it will be seen that the needle assembly is generally of the kind disclosed in our European Patent No.0776 225 providing for automatic retraction of the needle 10 into the body of the syringe after administration of an injection. The needle assembly includes an end cap 11 from which the needle 10 extends and a threaded boss 12 adapted to engage with a threaded socket 13 on the forward end of a syringe barrel 14 to connect the needle assembly with the barrel 14.

The assembly is retained, until required for use, in a protective and sterile sheath 16 whose open end is initially closed by a tear-off strip 17 of foil.

A circumferential rib 18 on the assembly engages a circumferential indent 19 within the sheath 16 to hold the assembly within the sheath and prevent it from falling therefrom.

The outer surface of the sheath 16 is knurled at 20 to facilitate its rotation to threadedly engage the boss 12 with the socket 13, torsional forces applied to the sheath 16 being transmitted to the needle assembly by a splined connection between the sheath and assembly comprised by teeth 21 extending outwardly from the end cap 11 engaging keyways 22 in the sheath.

The length of the sheath 16 is such that, after removal of the strip 17, the rim of its open end engages the barrel 14 before the threaded connection between the boss 12 and socket 13 is complete whereby completion of the connection forces the sheath forwardly to disengage the rib 18 from the indent 19 and allow the sheath to be removed as shown in Figures 4-7.

It will be understood that the needle is contained within the sheath throughout the connection operation reducing the risk of injury or contamination.

It will be appreciated that it is not intended to limit the invention to the above example only, many variations, such as might readily occur to one skilled in the art, being possible, without departing from the scope thereof as defined by the appended claims.

Thus, for example, the assembly may connect with the barrel by way of a bayonet-type connection.

Again, for example, the interengaging means between assembly and sheath may be a frangible connection.

CLAIMS

1. A combination of a hypodermic needle assembly for connection to the barrel of a syringe and a protective sheath enclosing the assembly until required for use, the assembly and sheath having interengaging means to hold the assembly within the sheath characterised in that the length of the sheath is such that the rim of its open end engages the barrel of the syringe before connection with the syringe is complete whereby completion of the connection forces disengagement of the interengaging means.
2. A combination according to claim 1 wherein the interengaging means comprise a circumferential rib on the assembly and an indent on the sheath.
3. A combination according to claim 1 or claim 2 wherein the assembly connects with the syringe by means of a screw thread.
4. A combination according to claim 1 or claim 2 wherein the assembly connects with the syringe by means of a bayonet-type connection.
5. A combination according to claim 3 or claim 4 wherein there is an axially extending splined connection between the assembly and the sheath whereby torsional forces applied to the sheath during the connecting operation are transmitted to the assembly.

1/2

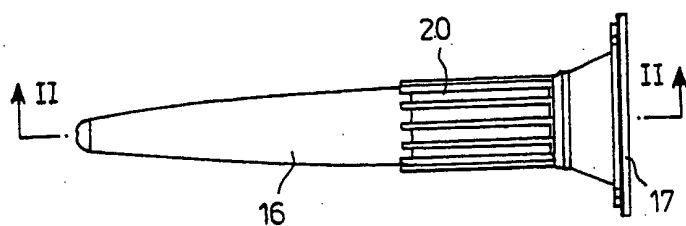


FIG.1

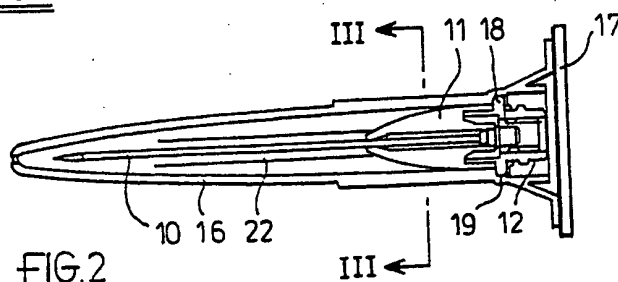


FIG.2

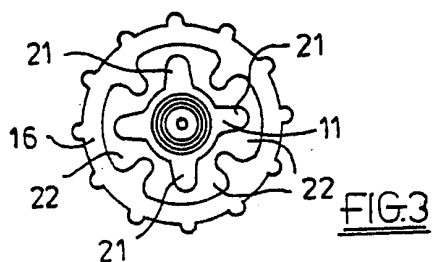


FIG.3

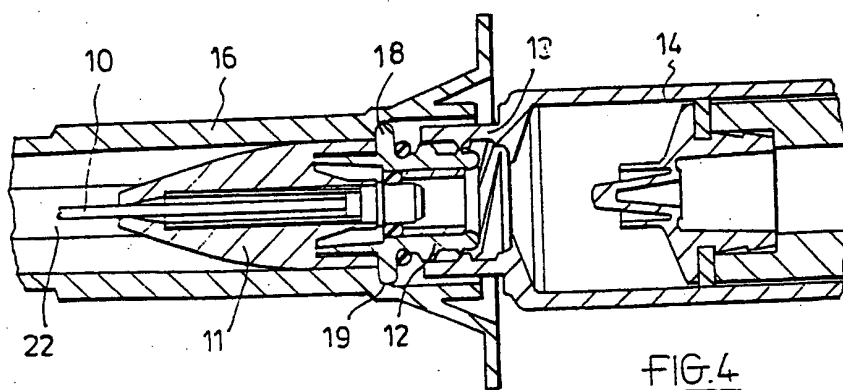
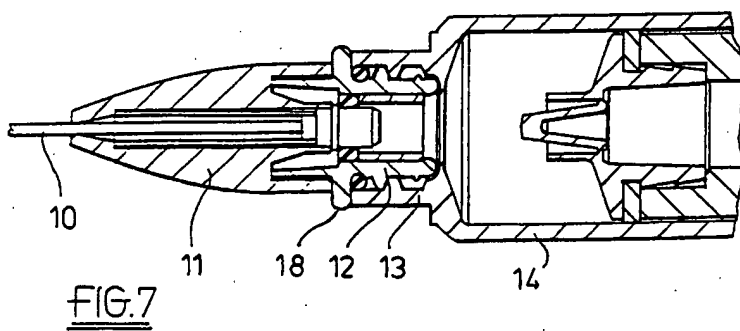
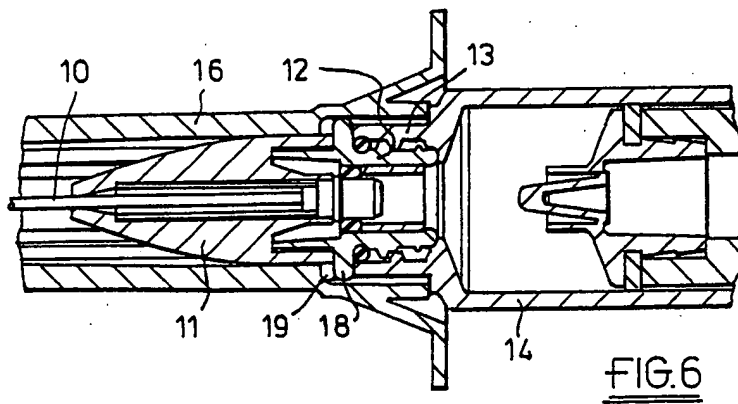
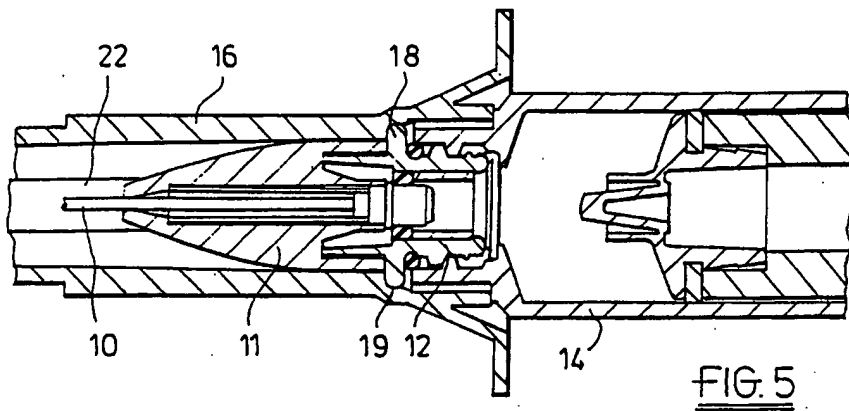


FIG.4



INTERNATIONAL SEARCH REPORT

International Application No

PCT/GB 99/01006

A. CLASSIFICATION OF SUBJECT MATTER
IPC 6 A61M5/32 A61M5/34

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)
IPC 6 A61M

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	US 4 927 019 A (HABER ET AL) 22 May 1990 (1990-05-22) column 5, line 12 - column 6, line 24; figures 7-12	1,3,5
X	WO 88 06463 A (SECR DEFENCE BRIT) 7 September 1988 (1988-09-07) page 2, line 26 - page 3, line 13; figure 1	1,3
A	FR 2 665 079 A (CONCEPTION ET FABRICATION D'INNOVATIONS MECANIKES COFIM) 31 January 1992 (1992-01-31) page 3, line 9 - page 4, line 18; figures 1-3	1-3,5

☒ Further documents are listed in the continuation of box C.

☒ Patent family members are listed in annex.

* Special categories of cited documents :

"A" document defining the general state of the art which is not considered to be of particular relevance

"E" earlier document but published on or after the international filing date

"L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)

"O" document referring to an oral disclosure, use, exhibition or other means

"P" document published prior to the international filing date but later than the priority date claimed

"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention

"X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone

"Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art.

"G" document member of the same patent family

Date of the actual completion of the international search

25 August 1999

Date of mailing of the international search report

02/09/1999

Name and mailing address of the ISA

European Patent Office, P.B. 5818 Patentlaan 2
NL - 2280 HV Rijswijk
Tel. (+31-70) 340-2040, Tx. 31 651 epo nl,
Fax: (+31-70) 340-3016

Authorized officer

Levert, C

INTERNATIONAL SEARCH REPORT

International Application No.
PCT/GB 99/01006

C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	FR 1 558 713 A (NOVAMPOULE A6) 28 February 1969 (1969-02-28) page 2, right-hand column, line 9 - page 3, left-hand column, line 51; figures 1,2 -----	1,3,5

INTERNATIONAL SEARCH REPORT

information on patent family members

International Application No

PCT/GB 99/01006

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
US 4927019 A	22-05-1990	NONE	
WO 8806463 A	07-09-1988	AU 1299188 A GB 2223411 A, B	26-09-1988 11-04-1990
FR 2665079 A	31-01-1992	NONE	
FR 1558713 A	28-02-1969	CH 491649 A DE 1616491 A GB 1217152 A US 3512524 A	15-06-1970 29-04-1971 31-12-1970 19-05-1970